

CLAIMS

1. A method of controlling one of a plurality of middleboxes in a communications network, each of the middleboxes being connected to a plurality of entities in an address realm of the communications network, said method comprising the steps of:-

(i) receiving a control message at a middlebox-identity-providing node in the communications network, said control message comprising information about one of the entities in the communications network;

(ii) using the middlebox identity providing node to determine the identity of a first middlebox connected to said one entity;

(iii) sending said identity to a middlebox control node in the communications network in order to control said first middlebox;

and wherein the middlebox-identity-providing node is separate from the middlebox control node and is more directly connected to said one of the entities than the middlebox control node.

2. A method as claimed in claim 1 wherein said step (iii) of sending said identity comprises adding said identity to a control message and sending said control message.

3. A method as claimed in claim 2 wherein additional information is also added to the control message.

4. A method as claimed in claim 2 wherein said control message is a session description protocol (SDP) message.

5. A method as claimed in claim 4 wherein said identity is added to an SDP message using a pre-specified SDP attribute.

6. A method as claimed in claim 1 wherein said control message is a call set-up message and said method is arranged to control said first

middlebox in order to set-up a call from said one entity to another entity connected to a second middlebox in the communications network.

7. A method as claimed in claim 6 wherein said second middlebox is connected to a plurality of entities in a second address realm different from the first address realm of the entities connected to the first middlebox.

8. A method as claimed in claim 7 wherein the middlebox control node is within a third address realm different from the first and second address realms.

9. A method as claimed in claim 8 wherein the third address realm is public.

10. A method as claimed in claim 9 wherein the first and second address realms are private.

11. A method as claimed in claim 1 wherein the middlebox-identity-providing node is selected from: one of the middleboxes; a gateway in the communications network; said one entity, being a user terminal in the communications network; a gateway comprising a business services channel manager (BSCM).

12. A method as claimed in claim 6 wherein said call passes through two or more middleboxes and wherein information about the identity of each such middlebox is added to said control message.

13. A method as claimed in claim 1 wherein said middlebox control node is a MIDCOM agent.

14. A method as claimed in claim 1 wherein said middlebox control node is distributed and comprises more than one node in the communications network.

15. A method as claimed in claim 1 wherein each of the middleboxes is selected from, a firewall, a network address translator (NAT), and a quality of service device.

16. A method as claimed in claim 1 wherein said middlebox-identity-providing node is arranged to determine the identity of the first middlebox by using pre-specified information.

17. A method as claimed in claim 1 wherein said middlebox-identity-providing node is arranged to determine the identity of the first middlebox by automatically analysing the communications network.

18. A communications network comprising:

- (i) a plurality of middleboxes, each connected to a plurality of entities in an address realm of the communications network;
- (ii) a middlebox-identity-providing node arranged to receive a control message comprising information about one of the entities and to determine the identity of a first middlebox connected to said one entity;
- (iii) a middlebox control node arranged to receive the determined identity of the first middlebox in order to control said first middlebox; said middlebox-identity-providing node being separate from the middlebox control node and being more directly connected to said one of the entities than the middlebox control node.

19. A communications network as claimed in claim 18 wherein said middlebox-identity-providing node is further arranged to send said determined identity to the middlebox control node as part of a control message.

20. A communications network as claimed in claim 19 wherein said control message is a session description protocol message.

21. A signal comprising a session description protocol message comprising an attribute containing information about the identity of a middlebox.

22. A signal as claimed in claim 21 wherein said information about the identity of a middlebox is selected from, a fully-qualified domain name (FQDN) and an internet protocol address.

23. A middlebox control node arranged to control a plurality of middleboxes in a communications network, said middlebox control node comprising:

- (i) an input arranged to receive a control message comprising information about the identity of one of the middleboxes;
- (ii) a processor arranged to issue messages to the identified middlebox in order to control it; such that in use the middlebox control node is able to control the identified middlebox without the need to maintain its own store of information about the identities of the middleboxes and without the need to maintain its own discovery mechanism to discover the identities of the middleboxes.

24. A middlebox-identity-providing node for use in a communications network comprising a plurality of middleboxes, said middlebox identity providing node comprising:

- (i) an input arranged to receive a control message comprising information about one of a plurality of entities in the communications network;
- (ii) a processor arranged to determine the identity of a first middlebox connected to said one entity;
- (iii) an output arranged to send said identity to a middlebox control node in the communications network; and wherein said middlebox-identity-providing node is arranged to be more directly connected to said one of the entities than the middlebox control node.

25. A computer program arranged to control a middlebox control node as claimed in claim 23 in order to

- receive a control message comprising information about the identity of one of the middleboxes; and to
- issue messages to the identified middlebox in order to control it.

26. A computer program as claimed in claim 25 which is stored on a computer readable medium.

27. A computer program arranged to control a middlebox-identity-providing node as claimed in claim 24 in order to:

- receive a control message comprising information about one of a plurality of entities in the communications network;
- determine the identity of a first middlebox connected to said one entity; and
- send said one entity to a middlebox control node in the communications network.

28. A computer program as claimed in claim 25 which is stored on a computer readable medium.